

We claim:

1. The DNA sequence SEQ ID NO:1 and DNA sequences hybridizing therewith, encoding an HPPD.
2. An expression cassette comprising a promoter and a DNA sequence as claimed in claim 1.
- 10 3. An expression cassette as claimed in claim 2, comprising the CaMV 35S promoter.
4. An expression cassette as claimed in claim 2, comprising the seed-specific phaseolin promoter.
- 15 5. An expression cassette as claimed in claim 2, the DNA sequence as claimed in claim 1 being functionally linked to another protein in such a way that a joint translation product is formed.
- 20 6. The use of the expression cassette as claimed in claim 2 for transforming plants.
- 25 7. A method of transforming a plant, which comprises introducing an expression cassette as claimed in claim 2 into a plant cell, into callus tissue, into an entire plant or into plant cell protoplasts.
- 30 8. A method of transforming plants, which comprises
 - 1) transferring the expression cassette as claimed in claim 2 into an agrobacterial strain,
 - 2) isolating the recombinant clones formed, and
 - 3) using the latter for transforming plants.
- 35 9. A method as claimed in claim 8, the transformation being accomplished with the aid of the strain *Agrobacterium tumefaciens*.
- 40 10. A method of transforming plants as claimed in claim 7, wherein the transformation is accomplished with the aid of electroporation.
- 45 11. A method of transforming plants as claimed in claim 7, wherein the transformation is accomplished with the aid of the particle bombardment method.

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12. A plant with an elevated vitamin E content, comprising an expression cassette as claimed in any one of claims 2 to 5.

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13. A plant as claimed in claim 12, selected from the group consisting of soya, barley, oats, wheat, oilseed rape, maize or sunflowers.

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14. A method of generating plants with an elevated vitamin E content, which comprises expressing, in plants, a DNA sequence as claimed in claim 1.

15. A method as claimed in claim 14, wherein the DNA sequence is expressed in a tobacco plant.

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15 16. A method as claimed in any of claims 14 and 15, wherein expression takes place in the leaves or the seeds of the plant.

17. The use of an expression cassette as claimed in any of
20 claims 2 to 5 for generating plants with an elevated vitamin E content by means of expressing, in plants, a DNA sequence as claimed in claim 1.

18. The use of the expression cassette as claimed in claim 2 for
25 generating a test system for identifying HPPD inhibitors.

19. A test system based on the expression of an expression cassette as claimed in claim 2 for identifying HPPD inhibitors.

30 20. A herbicidally active substance which can be identified by means of a test system as claimed in claim 19.

35 21. The use of a plant as claimed in claim 12 for generating plant HPPD.

40 22. The use of the expression cassette as claimed in claim 2 for generating plants with elevated resistance to HPPD inhibitors by means of higher expression of a DNA sequence as claimed in claim 1.

45 23. A method of generating plants with elevated resistance to HPPD inhibitors by means of higher expression of a DNA sequence as claimed in claim 1.

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24. A plant with elevated resistance to HPPD inhibitors, *Claim 2*
comprising an expression cassette as claimed in any of claims
~~2 to 5.~~

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DNA sequence encoding a hydroxyphenylpyruvate dioxygenase gene
and its overproduction in plants

5 Abstract

A method is described of generating plants with elevated vitamin E biosynthesis performance by overexpressing a plant HPPD gene from barley.

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